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LIFE-HISTORIES OF INDIAN INSECTS MICROLEPIDOPTERA

IV. COSMOPTERYGIDÆ, ŒCOPHORIDÆ, PHYSOPTILIDÆ, XYLORYCTIDÆ, STENOMIDÆ AND ORNEODIDÆ

BY

T. BAINBRIGGE FLETCHER, R.N., F.L.S., F.E.S., F.Z.S

Imperial Entomologist

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T. BAINBRIGGE FLETCHER, R.N., F.L.S., F.E.S., F.Z.S.,
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(Received for publication on 27th June 1919.)

METACHANDIDÆ.

This family is typical of the Mascarene area, one species (*Metachanda crocozona*, Meyr.) being recorded from Assam and a few others from South Africa. Nothing seems to be known of the early stages of this group.

COSMOPTERYGIDÆ.

ANATRACHYNTIS SIMPLEX, WLSM.

Pyroderces simplex, Wlsm., T. E. S., 1891, 119-120, t. 6, f. 58 ([1]); Durrant, Bull. Ent. Res., III, 206-207, f. 2 (1912) ([2]); Lamborn, *l.c.*, V, 201 (1914) ([3]); Willcocks, Ins. Pests Egypt, I, i, 317-320, t. 7, ff. 7-9 (1916([3a]).

Batrachedra coriacella, Snellen, Tijds. v. Ent., XLIV, 95, t. 6, f. 17 (1901)([4]).

Stagmatophora gossypiella, Wlsm., A. M. N. H. (7), XVIII, 178-179 (1906([5]); Morstatt, Pflanzer, VIII, 253 (1912)([6]).

Stagmatophora coriacella, Lefroy, Ind. Ins. Life, p. 536 (1909)([7]); Meyr., T. E. S., 1910, 372([8]).

Pyroderces coriacella, Fletcher, S. Ind. Ins., pp. 458-459, f. 334 (1914)([9]); Meyr., Entom. Mitteil. Suppl., III, p. 52 (1914)([10]).

Anatrachyntis coriacella, Meyr., Exot. Micr., I, 325 (1915)([11]).

Anatrachyntis simplex, Fletcher, Proc. Second Entl. Meeting, p. 114 (1917)([12]).

Larva in cotton-seed ([2, 3, 3a, 4, 5, 6, 7, 8, 9]), in India ([7, 8]), Burma([7]), Java([4]), Formosa([10]), Mauritius([8]), E. Africa([6]), Egypt([2, 3a, 5]), and West Africa([1, 3]). Described by Lefroy([7]) and Willcocks([3a]).

"*Stagmatophora coriacella*, ... can be bred in abundance from dry cotton seeds left too long on the plant. The caterpillar is red, not unlike that of *Gelechia gossypiella*, only smaller and is not found in the green boll or in unripe seed, as is the latter, and is not destructive. We have reared this from cotton-seed from many parts of India, and I. H. Burkill sent it in from Amherst, Burma"([7]).

Willcocks gives([3a]) the following more complete description of the early stages and figures the full-grown larva and pupa [erroneously referred to on the plate as *P. gossypiella*] :—

"*Egg*. Very minute, oval, convex, measuring about 0·36 mm. long by 0·22 mm. wide, the shell longitudinally striated. Laid on damaged ripe cotton bolls and the exposed parts of the interior.

"*Larva*. The larvæ feed on the injured seeds and fibre and general debris to be found in bolls which have been attacked by bollworms. At first the larvæ are white with a brownish head ; later and whilst still quite small, they may become pinkish or sometimes they will be found to be quite dark-coloured owing to their having fed on dark coloured decayed matter, which shows through the somewhat transparent skin ; or again, the skin may be covered and thus discoloured by the spores of the black sooty fungus frequently present in damaged cotton-bolls late in the year. When full-grown the larva (Plate VII, fig. 9) measures some 7 to 8 mm. long by 1·5 mm. broad. The head is light yellowish-brown and the thoracic shield is of the same colour but paler. The body is pale or slightly yellowish with two conspicuous and very distinct reddish-pink transverse and narrow bars on the back of each segment. The transverse barrings are so distinct that this character alone serves to distinguish the *Pyroderces* larva from the pink bollworm [*Gelechia gossypiella*], in which the reddish-pink colour is much more generally suffused over the dorsum ; and moreover, *Gelechia* larvæ of the size of the *Pyroderces* larva are, generally speaking, still white or white with faint pink suffusions around the hair tubercles.

"*Pupa*. The pupa (Plate VII, fig. 8) may be found in the damaged boll enclosed in a light cocoon of silk. It is smaller and less robust than the pupa of *Gelechia*, and is of a different form as will be seen if the illustrations of the two species are compared. The pupa of the pink bollworm is hairy and has several small hooklets near the tip of the abdomen. These are not present on the *Pyroderces* pupa."

Our records have little to add to Mr. Willcocks' description given above. The larvæ sometimes bore into young unopened cotton leaves when they dry up under conditions of rearing. This moth has been reared at Pusa from dry cotton-bolls, cotton buds, *bhindi* (*Hibiscus esculentus*), rotten peach fruit, dry fallen *gular* (*Ficus glomerata*) fruit, rotten bamboo stalk, *tur* (*Cajanus indicus*) stem, dry pods of *Vigna catjang* and from wheat flour in company with *Sitotroga cerealella*; at Coimbatore from cotton bolls and buds, castor, maize cobs and *cholam* (*Andropogon Sorghum*) ear-heads; at Hagari from *cholam* ear-heads webbed up by larvæ of *Stenachroia elongella*; at Gobichettipalayam (Coimbatore District) from a rotten pomegranate fruit; and at Chidambaram, Belgaum, Surat, Shibpore Farm (Calcutta), Ferozepur, Rohtak, Sialkote and Myingyan (Burma) from cotton bolls. From the above records it would appear that this insect is merely a rubbish-feeder on vegetable refuse and not a pest.

ANATRACHYNTIS FALCATELLA, STT.

Gracilaria ? falcatella, Stainton, T. E. S. (n.s.), V, 121 (1859)(1).

Pyroderces spodochtha, Meyr., B. J., XVI, 607 (1905)(2); Exot. Micr., I, 280 (1914)(3).

Anatrachyntis falcatella, Meyr., Exot. Micr., I, 325 (1915)(4); Fletcher, Proc. Second Entl. Meeting, p. 114 (1917)(5).

Reared at Kandy from larva in resinous masses of Lac Coccid, *Tachardia albizziæ*(2). The pupa is described as "unusually stout, entirely without spines; dehiscing by a longitudinal slit in head, not breaking up, antennal cases fixed in pupal skin, abdominal segments apparently all fixed (?), wing-cases firmly attached and reaching to end of seventh segment"(3).

Originally described from Calcutta(1); also recorded from Kandy(2). We have it from Shillong and Pusa. At Pusa it has been reared from larvæ on cotton shoots "in *Eublemma* cage" and "on *Dactylopius* on cotton". The Pusa collection also contains a specimen, identified as *falcatella* by Mr. Meyrick and reared from a rotten pomegranate at Gobichettipalayam (Coimbatore District); but this specimen looks to me like *A. simplex*.

The larva seems to be predaceous on Coccidæ, but has not been described.

ANATARACTIS PLUMIGERA, MEYR.

Anataractis plumigera, Meyr., Exot. Micr., I, 565-566 (May 1916)(1); Fletcher, Entl. Note, 83 (June 1916)(2); Proc. Second Entl. Meeting, p. 81 (1917)(3).

Described from specimens bred at Pusa and Coimbatore from larvæ feeding in stems of *Indigofera*(1).

"*Anataractis plumigera*, Meyr., reared from pupa in stem of Indigo at Pusa, 4 May, 1912 (C. No. 945). The stem was swollen into a gall and evidently the larva had fed inside the stem"(2).

"*Anataractis plumigera* was reared from a gall in a stem of *Indigofera linifolia* at Pusa, but we have not noticed it in any cultivated indigo"(3).

We have this from Pusa and Chapra.

PYRODERCES ALBILINEELLA, VAN DEVENTER.

Pyroderces albilineella, Dev., Tijds. voor Ent., 1904, 33-34, t. 2, f. 5(1); Meyrick, Exot. Micr., I, 310 (1915)(2), *l.c.*, I, 566 (1916)(3).

Originally described from Java(1). Since recorded from the Kei Islands and Ceylon(2).

Bred in April at Coimbatore from larva boring in pods of *Cassia corymbosa*. Pupa rather stout, all segments fixed except anal(3).

It has also been reared at Coimbatore from larvæ in indigo pods and we have it from Virajpet (South Coorg).

PYRODERCES SEMICOCCINEA, STT.

Cosmopteryx ? semicoccinea, Stainton, T. E. S. (n.s.), V, 123 (1859)(1).
Pyroderces semicoccinea, Meyr., B. J., XIX, 411 (1909)(2), Exot. Micr., I, 310 (1915)(3).

Originally described from Calcutta(1); also recorded from Queensland(3).

Reared at Pusa from stems of *Cajanus indicus* in company with *P. promacha*, various Phycitids, etc. It appears to be a rubbish-feeder.

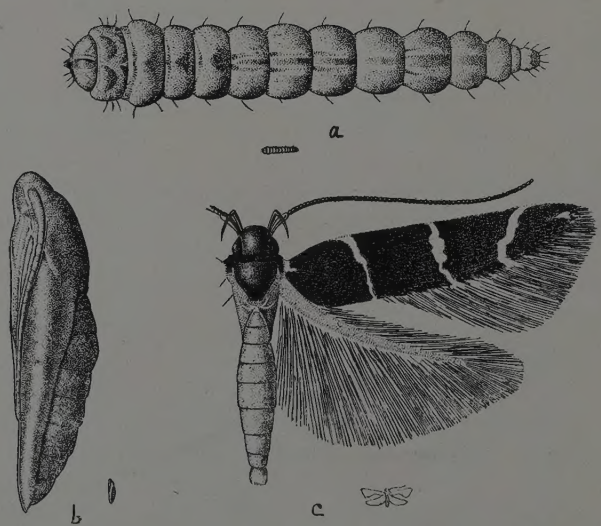
We have this from Pusa, the Shevaroys and Pollibetta (South Coorg).

PYRODERCES PROMACHA, MEYR.

Pyroderces promacha, Meyr., Pr. Linn. Soc. N. S. W., 1897, 351(1), Entom. Mitteil. Suppl., III, p. 54 (1914)(2).

Originally described from New South Wales(1), and since recorded from Formosa(2) and India(2). The Pusa collection contains specimens from Pusa, Coimbatore and Peshawar.

It has been reared at Pusa from a *tur* (*Cajanus indicus*) stem and is also said to have been reared from a larva found mining *Phaseolus mungo* leaves at Pusa on 29th April 1907, the moth pupating on 5th May and emerging on 11th May 1907. This larva was described as "2 mm. long, tapering posteriorly, orange-yellow; head yellowish-brown, flattened; thorax flattened; a green median line running from prothorax to anal segment and two brown spots on either side of this median line. When about to pupate it turned red and prepared a cocoon of white threads. Pupa emerged half-way out



Pyroderces callistrepta:—*a*, Larva ; *b*, pupa ; *c*, moth ; natural sizes and magnified.

of cocoon on exit of moth." (A. Mujtaba's Cage-slip 22.) It appears to me doubtful whether the above larva was really that of *P. promacha*. It is possible that the description refers to a Gracillariad leaf-miner, perhaps *Cyphosticha cærulea*.

PYRODERCES CALLISTREPTA, MEYR. (PLATE XXII.)

Pyroderces callistrepta, Meyr., Exot. Micr., II, 38-39 (1917)(1).

" Bred at Pusa from larvæ mining in leaves of teak (*Tectona grandis*) "(1).

We have this from Pusa and Chapra.

This species mines teak (*Tectona grandis*) leaves at Pusa at the end of February. The larva burrows under the epidermis on the upper surface of the leaf and produces large brown blisters, which are quite prominent on the green leaves and which are also visible from beneath. Several larvæ feed in one leaf and the entire surface of a leaf may show these brown blister-like patches, and practically all the leaves of large trees may be affected. Larvæ were found abundantly on 20th February 1915 and moths emerged between 25th February and 7th April. A large proportion of the larvæ are parasitized by a Chalcidid ; from one lot of larvæ collected twelve moths and sixty parasites emerged. If a leaf dries up, the larvæ leave it and are capable of entering fresh leaves and forming new mines therein.

The larva is about 5 mm. long, rather stout, flattened, tapering posteriorly, segments distinct, dirty white ; head flattened, narrower than prothorax, shiny brown ; prothoracic shield large, shiny brown ; legs dark brown ; prolegs minute.

Pupation takes place within the larval mine, usually at one side of the mine and alongside a leaf-vein, in a white silken cocoon which is covered with a mass of pellets of frass. The cocoon may easily be located on inspection of the under-surface of the leaf, as the place where it is situated swells up a little and feels hard to the touch. (Pusa Insectary Cage-slip 1161.)

LIMNŒCIA METACYPHA, MEYR.

Limnœcia metacypha, Meyr., Exot. Micr., I, 203-204 (1914)(1).

Described from Peradeniya in October(1). " Cocoon firm, oval, white, with attached excrement, placed between spun leaves where the larva has apparently fed "(1).

LIMNŒCIA PERONODES, MEYR.

Limnœcia peronodes, Meyr., Exot. Micr., I, 318 (1915)(1).

Reared at Pusa in May from larvæ feeding in leaf-sheaths of bamboos(1).

Our specimens are all from Pusa and have been bred from pupa found on bamboo, from larva on unnoted foodplant, and from larva " on Coccidæ

on bamboo (T. N. Jhaveri, 13th July 1908) ". The actual larval food seems uncertain.

COSMOPTERYX MIMETIS, MEYR.

Cosmopteryx mimetis, Meyr., Pr. Linn. Soc. N. S. W., 1897, 339(1), B. J. XIX, 417 (1909)(2), T. E. S., 1910, 372(3), Tr. Linn. Soc. (Z), XIV, 282 (1911)(4), T. E. S., 1915, 205(5).

Common throughout India and Ceylon and widely distributed from Australia(2), New Guinea(2) and Borneo(2) to Mauritius(3, 4), the Seychelles(4) and British Guiana(5).

Mr. Meyrick has suggested that the larva is " probably attached to some plant of cultivation "(3). It may be noted that *Cosmopteryx pallifasciella*, Snell. (*Tijds. v. Ent.*, XL, 138-139, t. 6, f. 1 (1897)), described from Java, mines in sugarcane in its larval stage.

C. mimetis has been bred at Pusa from larvæ found mining leaves of *motha* grass (*Cyperus rotundus*). The larva mines the leaf either in its middle or in its apical part, the mine running along and on either side of the mid-rib. From larvæ collected on 15th September 1916, thirty-eight moths emerged from 25th September to 8th December, and eight Hymenopterous parasites were also reared.

The larva is about 3 mm. long, tapering posteriorly, uniform light yellow ; head flattened, narrower than prothorax, the lobes much elongated posteriorly ; prothorax broader than following segments ; legs and prolegs small. (Pusa Insectary Cage-slips 1472, 1521.)

We have *C. mimetis* from Peshawar, Pusa and Bassein Fort. It is probably widely distributed throughout the Plains of India.

COSMOPTERYX BAMBUSÆ, MEYR. (PLATE XXIII, FIG. 1.)

Cosmopteryx bambusæ, Meyr., Ent. Mo. Mag., LIII, 258 (Nov. 1917)(1).

" Pusa, bred in October from larvæ mining blotches in leaves of bamboo (*Fletcher*). . . . . A pupa-case sent (very little discomposed by the emergence of imago through a small slit) shows only two abdominal segments free, the rest fixed, wing-cases reaching to end of penultimate segment "(1).

Larvæ were found at Pusa on 3rd January 1916 and 21st September 1916, mining blotches in bamboo leaves. The larva mines the leaf, forming a sharply-defined yellowish-white patch in the middle of the leaf-blade and usually on one side of the mid-rib. There may be two or even three larvæ in one leaf, forming mines on either side of the mid-rib or at different places on the same side of it. The mine commences as a narrow strip which gradually

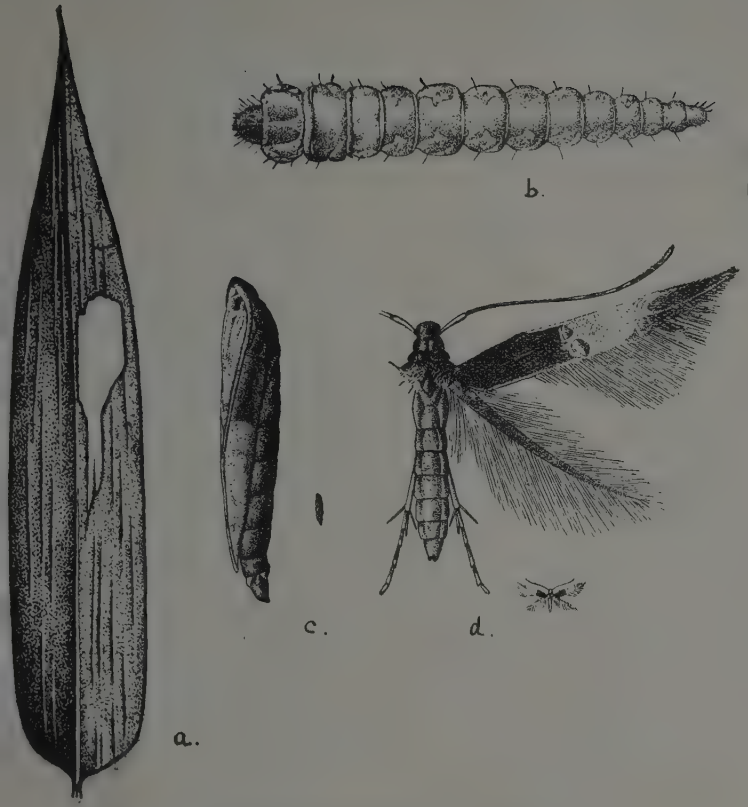


Fig. 1. *Cosmopteryx bambusae*:– *a*, Bamboo leaf with larval mine ; *b*, larva ; *c*, pupa ; *d*, moth ; (all x 10).

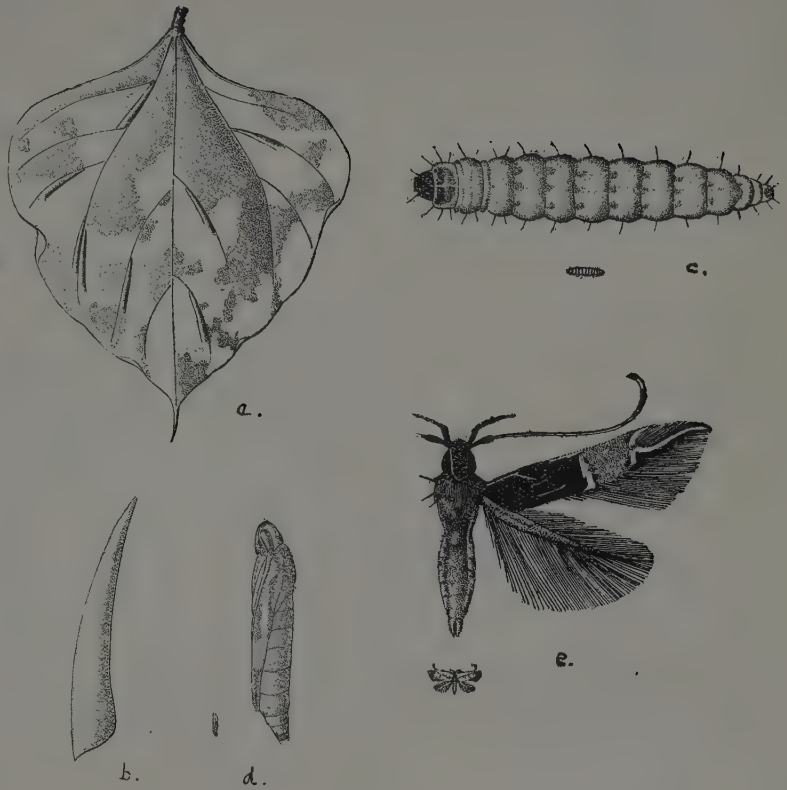


Fig. 2. *Cosmopteryx phaeogastra*:—*a*, Bean-leaf mined by larvæ ; *b*, a larval case ; *c*, larva : *d*, pupa ; *e*, moth ; natural sizes and magnified (x 9).

PLATE XXIII.

widens and suddenly develops into a large whitish blotch. Wherever the mine may be started, the larva always works towards the apex of the leaf and hence the expanded portion of the mine always lies towards the apex. The narrowed portion of the blotch is filled with brown frass.

The full-grown larva is about 7 mm. long and about 1 mm. across the prothorax and metathorax, which are the broadest segments, tapering posteriorly, flattened, segments well-defined and somewhat protuberant laterally, uniform pale yellow. Head flattened, much smaller than prothorax (into which it is partly retractile), brown. Prothoracic shield pale yellow. Spiracles form short minute protuberant tubes. Five pairs of short prolegs.

When full-grown, the larva severs the margins of the broadened portion of its mine and rolls one layer longitudinally inwards and pupates inside the roll so formed.

The larvæ are extensively parasitized, and less than half the number of larvæ collected emerged as moths. Larvæ collected on 21st September 1916 emerged between 11th October and 2nd November 1916, and others collected on 3rd January 1916 emerged between 5th March and 14th April 1916. (Pusa Insectary Cage-slips 1343, 1470.)

COSMOPTERYX PHÆOGASTRA, MEYR. (PLATE XXIII, FIG. 2.)

Cosmopteryx phæogastra, Meyr., Ent. Mo. Mag., LIII, 257-258 (Nov. 1917)[1]; Fletcher, Ann. Rept. Impl. Entom., 1917-18, p. 101 (1918)[2].

"Pusa; bred in July from larvæ mining blotches in leaves of bean (*Fletcher*)."

Larvæ were found at Pusa on 22nd November 1916 mining bean leaves, between whose epidermal layers the larva forms a cylindrical silken case which is always placed alongside a leaf-vein. The case is about 10 mm. long, narrowed towards one end and expanded towards the other, and inside it the larva lives, emerging or at least thrusting its anterior extremity out from the broader end of the case and mining the leaf, feeding only at night. The narrower end of the larval case is open and the black larval frass is extruded through it. Usually several larvæ, up to twenty or even more, are found on one leaf, and occasionally two cases are joined together side by side.

The larva is about 6 mm. long and about 1 mm. broad across the middle of the body, rather stout, flattened, tapering slightly anteriorly and more prominently posteriorly, segments distinct, uniform pale yellow; head shiny, dark brown, narrower than prothorax into which it is slightly retractile, lobes prominent posteriorly; prothoracic shield yellow-brown, divided medially; anal segment with a brownish shield; five pairs of small prolegs.

The larvæ hibernated and the moths emerged throughout the month of July 1917. About one-third of the larvæ were parasitized, the parasite emerging at the same time as the moths. (Pusa Insectary Cage-slip 1602.)

We have this from Pusa and from Coimbatore ; the latter specimens are labelled " on lablab creeper, 10th February, 1915," but it is not evident whether they were bred or not.

CHOLOTIS CRYPSILOGA, MEYR.

Cholotis crypsiloga, Meyr., Exot. Micr., I, 329-330 (1915)(1).

Reared at Coimbatore in November from larva on *Acacia*(1).

CHOLOTIS PACHNODES, MEYR.

Cholotis pachnodes, Meyr., Exot. Micr., II, 44 (1917)(1).

Bred at Pusa in May from larva feeding on twigs of *Tamarix gallica*(1).

AGANOPTILA PHANARCHA, MEYR.

Aganoptila phanarcha, Meyr., Exot. Micr., I, 334 (1915)(1).

Bred at Pattipola, Ceylon (6,200 feet), in March from galls on undetermined tree(1).

MICROCOLONA CITROPLECTA, MEYR.

Microcolona citroplecta, Meyr., Exot. Micr., II, 49-50 (1917)(1).

Described from Coorg and Pusa. The Pusa specimen, taken in July, was found on a stem of *Eugenia jambolana*, which may perhaps be the food-plant.

BATRACHEDRA ARENOSELLA, WLK.

Gracilaria arenosella, Walker, Cat., XXX, 857 (1864)(1).

Batrachedra arenosella, Meyr., Trans. N. Z. Inst., 1888, 181(2), Pr. Linn. Soc. N. S. W., XXII, 302-303 (1897)(3), Exot. Micr., II, 30-31 (1916)(4).

Batrachedra psilopa, Meyr., B. J., XVII, 982 (1907)(5).

Originally described from New Zealand(1), this widely-distributed species is now known to occur also in Tasmania(3), Queensland(3), New South Wales(3), South Australia(3), and British Guiana(4). Within our limits it has been recorded(4) from Maskeliya, Coorg, Bangalore, Calcutta and the Khasi Hills. We have it from Pusa.

" Larva amongst seeds of *Juncus*, joining them together with a slight web. Pupa very slender, in a cocoon amongst the seeds "(3).

BATRACHEDRA SILVATICA, MEYR.

Batrachedra silvatica, Meyr., Exot. Micr., II, 35 (1917)(1).

"Bred at Kumaon (6,000 feet) from twigs of *Pinus longifolia* (*Beeson*). I think the larvæ probably fed on dry refuse, as usual in the genus"(1).

This species was bred in large numbers at Dehra Dun by Mr. C. Beeson in September 1915 from *chir* pine twigs attacked by a *Ripersia* scale, and collected before 20th August 1915 at Almora (6,000 feet). Mr. Beeson considers that this insect is probably predaceous on the *Ripersia*.

The larvæ of *Batrachedra* seem to be feeders on dry refuse. The genus is noteworthy as containing a species (*B. stegodyphobius*) whose larva inhabits the nests of a social spider (*Stegodyphus*) in South Africa.

ŒCOPHORIDÆ.

ENDROSIS LACTEELLA, SCHIFF.

Tinea lacteella, Schiff., Syst. Verz. Schm. Wien, p. 119 (1776)(1).

Endrosis lacteella, Meyr., Handbk., pp. 688-689 (1895)(2), Rec. Ind. Mus., V., 224(3); Wlsm., Fauna Hawaii, p. 649 (1907)(4).

Endrosis fenestrella, Staint., Buckler, Larvæ, IX, 334-335, t. 162, f. 12 (1899)(5).

A cosmopolitan species, recorded from Kurseong(3) and Darjiling(3). We have it from Darjiling and Ootacamund.

The larva feeds on seeds, flour dust and dry refuse generally. Buckler describes the full-grown larva as "about half an inch in length, slender, with reddish-brown head and darker mouth; a plate of similar colour is on the second segment, but divided dorsally by the creamy-white ground colour of the body, and having a margin of this next the head; the anal plate is faintly tinged with yellowish-brown; the segmental folds at the divisions show white" (5). The general colour is whitish or pale flesh-colour.

BORKHAUSENIA PSEUDOSPRETELLA, STT.

Œcophora pseudospretella, Stainton, Syst. Cat. Brit. Tin., p. 14 (1849)(1); Buckler, Larvæ, IX, t. 162, ff. 13, 13*a*, 13*b* (1899)(2).

Acompsia pseudospretella, Meyr., Handbk., p. 637, p. 634, fig. (1895)(3).

Borkhausenia pseudospretella, Meyr., B. J., XX, 143 (1910)(4), Rec. Ind. Mus., V, 224(5).

Recorded from Nuwara Eliya in Ceylon(4), the Khasi Hills(4) and Darjiling(5). Probably originally American, it is now practically cosmopolitan, but probably confined to the Hills within Indian limits. We have it from Ootacamund and the Palni Hills.

The larva is figured by Buckler(2), but without description. Meyrick describes it as "yellowish-white; head red-brown; plate of 2 pale ochreous; on seeds, dried plants, skins, etc."(3).

At Ootacamund a moth was found inside a bee-hive and in the Palni Hills this species has been found breeding on dry hides.

MACROBATHRA NOMÆA, MEYR.

Macrobathra nomœa, Meyr., Exot. Micr., II, 212 (1918)(1).

"Bred [at Coimbatore] from refuse lodged in fork of *Tamarindus indica* (Leguminosæ); no doubt the larva fed on the leaves as usual in the genus, which is wholly confined to the Leguminosæ"(1).

This species has been bred at Coimbatore from refuse found in the fork of a tamarind tree.

TONICA BARROWI, BINGHAM.

Binsitta barrowi, Bingh., T. E. S., 1907, 177-179, t. 13(1).

This species was described(1), from Maymyo, in Upper Burma, where the recently-emerged moth was found seated on the empty shell of the pupa which was fixed on to a twig of *Bombax malabaricum*. "In colour the pupa is yellowish-brown, the head is blunt, and with the thorax and wing-cases broad and flattened. On the ventral side the fourth segment has two closely approximate tubercles placed transversely, between which is a longitudinal short white streak; fifth to twelfth segments with transverse rows of small conical projections, constrictions between the segments strongly marked; seventh segment with a large conspicuous rounded black tubercle on each side, behind each of which is a larger pale yellow or white tubercle; on the broad flattened truncated head, dividing the ventral from the dorsal side, is an impressed dark line. The pupa is fixed by its tail end in a semi-erect position to the twig on which it was found, and bears . . . . . a striking resemblance to the head of a snake and, strange to say, of a bird-eating tree-snake (*Lycodon aulicus*, Linn.) which is far from uncommon in Burma."

TONICA NIVIFERANA, WLK. (PLATE XXIV.)

Binsitta niviferana, Wlk., Cat., XXIX, 832(1); Wlsm., P. Z. S., 1885, 884(2); Lefroy, Ind. Ins. Life, p. 535 (1909)(3).

Tonica niviferana, Meyr., B. J., XX, 167 (1910)(4); Proc. Second Entl. Meeting, p. 131, tab. (1917)(5).

Widely distributed in India and Ceylon. Recorded from Andamans, Solan, Sikkim(4), Calcutta(2, 4), Bombay(4), Karwar(4) and Peradeniya(4).

TONICA NIVIFERANA.

Common at Pusa [illegible] ; Nagpur, and we [illegible]

The eggs are [illegible] the bottom of the cage and not on the [illegible] confinement. The egg is about [illegible] drical, irregularly oval, one end [illegible] latter with small papillæ all around [illegible] longitudinal ridges, which are [illegible] (Plate XXIV, fig. 2.)

The complete life-cycle does not appear [illegible] larvæ, about 6 mm. long, were [illegible] into stems of *Bombax malabaricum*. [illegible] brownish-yellow, without any of the markings [illegible] larva; head and large prothoracic shield [illegible] shield dark brown: [illegible]

EXPLANATION OF PLATE XXIV.

The larva bores into the axil of a [illegible]

TONICA NIVIFERANA.

Fig. 1. Top of a young *Bombax malabaricum* tree showing damage.
" 2. Egg, enlarged.
Figs. 3 & 4. Larva, enlarged.
Fig. 5. Pupa, enlarged.
Figs. 6 & 7. Moth, enlarged.

(The hair-lines show the natural sizes.)

with the [illegible]

[illegible] or slightly sub-cylindrical, the segments clearly defined [illegible] smaller than prothorax which is itself smaller than [illegible] band between head and prothorax; prothoracic [illegible] yellow; anal segment with its prolegs black. [illegible] yellow, dark-grey or black along lower portions of sides and ventral area; primary tubercles showing as circular black spots, [illegible] hairs, the dorsal tubercles [illegible] spiracles oval with black [illegible] with crochets arranged in a circle. (Plate XXIV, [illegible]

When full-fed the larva emerges from [illegible] leaf, the anal extremity of the pupa being [illegible] small curved-tipped cremastral hooks to a [illegible] surface of the leaf. The pupa is about 12 mm. long [illegible] the thoracic region, roughly tuberculated, brownish-grey [illegible] The pupal period in July is about six or seven [illegible]

EXPLANATION OF PLATE XXIV.

TONICA VIVIPERANA.

Fig. 1. Top of a young Bombax malabaricum tree showing damage.
" 2. Egg, enlarged.
Figs. 3 & 4. Larva, enlarged.
Fig. 5. Pupa, enlarged.
Figs. 6 & 7. Moth, enlarged.

(The hair-lines show the natural sizes.)

Common at Pusa and Chapra in Bihar. I have also seen a specimen from Nagpur, and we have it from Tocklai (Assam).

The eggs are laid singly and in confinement they were laid on the bottom of the cage and not on the plant supplied. One female laid 57 eggs in confinement. The egg is about 0·75 mm. long and about 0·35 mm. broad, cylindrical, irregularly oval, one end rounded and the other end flattened, the latter with small papillæ all around its rim; the egg-shell has prominent longitudinal ridges, which are toothed transversely throughout their length. (Plate XXIV, fig. 2.)

The complete life-cycle does not appear to have been worked out. Young larvæ, about 6 mm. long, were collected at Pusa on 2nd July 1914, boring into stems of *Bombax malabaricum*. At this stage the colour is uniform brownish-yellow, without any of the markings developed later on in the adult larva; head and large prothoracic shield shining dark brown or black, anal shield dark brown; primary tubercles showing as dull dark brown rounded spots; five pairs of equally-developed prolegs.

The larva bores into the axil of a leaf-sheath. It wanders about a little and selects a place where it means to bore in; then it quickly applies some white silk over this place so as to make a net-like covering under the shelter of which it bores into the plant, and the pellets of frass are attached to this net-work. As they become larger they bore into the stems, eating out the pith and reducing the twigs and branches to hollow tubes which are filled with the black larval extrement.

The full-grown larva is about 25 mm. long and 3·5 mm. broad, cylindrical or slightly sub-cylindrical, the segments clearly defined; head black, shiny, smaller than prothorax which is itself smaller than mesothorax; a broad white band between head and prothorax; prothoracic shield black, shiny, posteriorly yellow; anal segment with its prolegs black, shiny; other segments orange-yellow, dark-grey or black along lower portions of sides and ventral area; primary tubercles showing as circular black spots, from which arise short hairs, the dorsal tubercles connected transversely by dark grey markings; spiracles oval with black shiny rims; five pairs of fully-developed prolegs with crochets arranged in a circle. (Plate XXIV, figs. 3, 4.)

When full-fed the larva emerges from the stem and pupates openly on a leaf, the anal extremity of the pupa being broadly attached by the numerous small curved-tipped cremastral hooks to a net-work of silk applied to the surface of the leaf. The pupa is about 12 mm. long and 6 mm. broad across the thoracic region, roughly tuberculated, brownish-grey. (Plate XXIV, fig. 5.) The pupal period in July is about six or seven days.

When at rest the moth sits with its wings closed over the body and bears a very close resemblance to a bird's dropping. (Plate XXIV, fig. 6.) (Pusa Insectary Cage-slip 727 and unnumbered Cage-slip, dated 2nd July 1914.)

Adult moths have been taken at Pusa in March, April, July, August and October.

TONICA TERASELLA, WLK.

Tonica terasella, Wlk., Cat., XXIX, 788(1).

Tonica teratella, Meyr., B. J., XX., 167 (1910)(2).

Originally described from Sarawak(1), this species has also been recorded from Sikkim(2) and Karwar(2). We have it from Sikkim.

Pupa, erect on its tail, exposed; found on a leaf of bamboo (*Maxwell*)(2).

TONICA ZIZYPHI, STT. (PLATE XXV, FIG. 1.)

Depressaria zizyphi, Stainton, T. E. S. (n.s.), V, 115-116 (1859)(1).

Depressaria angusta, Wlsm., in Moore, Lep. Ceylon, III, 508, t. 209, f. 5 (1887)(2).

Tonica zizyphi, Meyr., B. J., XX, 167 (1910)(3); Fletcher, S. Ind. Ins., p. 459, f. 335 (1914)(4); Proc. Second Entl. Meeting, p. 211 (1919)(5).

Originally described from Calcutta(1), where it was bred from *Zizyphus jujuba*(1). Since recorded from Ceylon(2), Puttalam, Kegalle and Maskeliya(3), the Palni Hills(3) and Coimbatore(4). Common at Pusa and probably throughout India. It seems to be widely distributed in the Plains and we have it from Coimbatore (larva on orange), Chapra, Pusa (larva on orange, lemon and *Murraya*), and Peshawar (larva on orange).

Larva described as "about 8 mm. long, slender, yellowish-green with a black head. It folds orange leaves longitudinally feeding on young leaves and the green matter of older ones. Pupa 6 mm. long, reddish-brown, in a cocoon of transparent white silk spun in the folded leaf; pupal period about four to five days"(4). It feeds on *Citrus* of various species and may sometimes prove a pest by eating back the tender shoots of young plants(4).

The larva feeds on leaves of *Citrus* spp. and *Murraya kœnigii*. We have not found it on *Zizyphus*. When young the larvæ mine the leaves but after a short time they either tie up several apical leaflets together longitudinally or roll up a single young leaf by turning over the edge on to the blade and feed from within the roll; young tender leaves are always selected.

The full-grown larva is about 15 mm. long and 1·25 mm. broad, cylindrical, slightly tapering posteriorly, green in colour; head dull brown; prothoracic shield large, black; mesothoracic and metathoracic legs pale greenish-yellow; primary hairs on segments short, dark brown, placed on tubercles

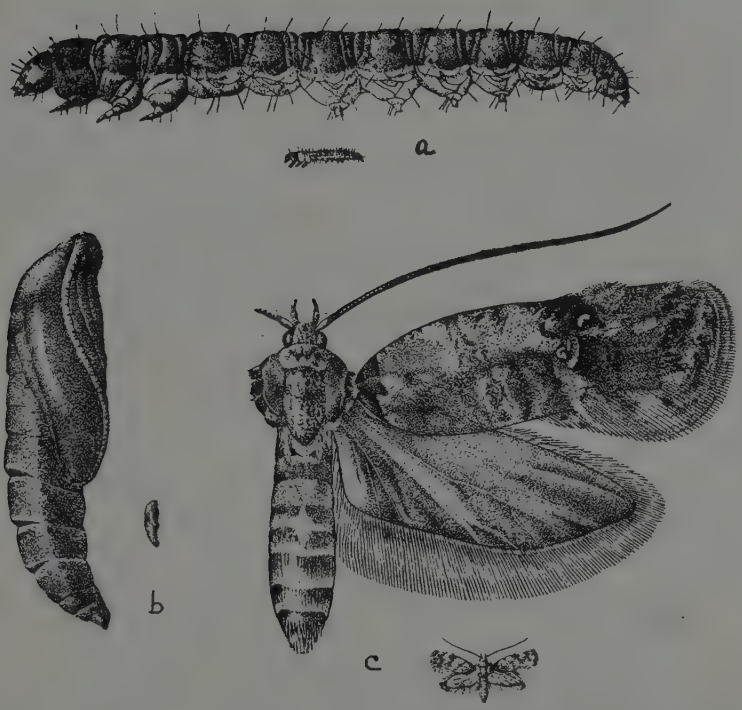


Fig. 1. *Tonica zizyphi*:—*a*, Larva ; *b*, pupa ; *c*, moth ; all natural sizes and magnified.

Fig. 2. *Pseudodoxia palimpsesta*:—*a*, Larva in case; *b*, larva removed from case ; *c*, hooks on larval prolegs ; *d*, section of case, showing pupa, cast larval skins and double cover to upper end of case. **All magnified.**

which are slightly protuberant above the general surface of the skin ; spiracles almost circular, rimmed with black enclosing a clear yellowish space ; five pairs of equally-developed short prolegs. Prior to pupation the colour changes to pink or to a dull brown with a slight pinkish tinge.

Pupation takes place in a thin silken cocoon formed inside the rolled-up leaflet or leaflets. The pupa is brown, dorso-ventrally compressed, about 6 or 7 mm. long and about 2 mm. across the metathoracic region, tapering sharply posteriorly ; wing-pads rather projecting over ventral surface of body ; anal segment with a few longish circinate hairs which are entangled in the cocoon. From larvæ collected on 4th September 1917, fourteen moths emerged between 12th and 23rd September. (Pusa Insectary Cage-slips 789 and 1676.)

CRYPTOLECHIA ARVALIS, MEYR.

Cryptolechia arvalis, Meyr., B. J., XX, 163 (1910)(1).

Recorded from Karwar in North Kanara and from Coorg(1).

Larva greyish-green, head black ; feeds between two or more leaves of *Careya arborea*, spun together so as to adhere flatly ; pupates in same position ; abundant in larval stage, but never met with on wing (*Maxwell*)(1).

PORTHMOLOGA PARACLINA, MEYR.

Porthmologa paraclina, Meyr., Exot. Micr., I, 261 (1914)(1).

Recorded from Surat(1) and Pusa(1). Attached to *Zizyphus jujuba*(1).

Has been reared at Pusa from larvæ rolling leaves and boring shoots of *ber* (*Zizyphus jujuba*).

PSEUDODOXIA CRETATA, MEYR.

Pseudodoxia cretata, Meyr., B. J., XVII, 407-408 (1906)(1).

Described from Matale and Peradeniya(1).

Larva in case exactly like *P. limulus*(1).

PSEUDODOXIA LIMULUS, ROGENH.

Fumea ? *limulus*, Rogenhofer, Verh. ZB. Ges., XXXIX, p. 60(1).

Pseudodoxia limulus, Durrant, E. M. M., 1895, 107-109, figs.(2) ; Sharp, Cambr. Nat. Hist., Ins., II, 431 (1899)(3).

Pseudodoxia sepositella (*nec* Wlk.), Meyr., B. J., XVII, 407 (1906)(4), *l.c.*, XX, 153 (1910)(5).

This species is known from Kandy and Pundaluoya(2).

The larva is of a fleshy-pink colour, the apex of the head black, truncate concave, forming an operculum to the tube ; thoracic segments reddish-pink, first six abdominal segments brownish, the remaining three yellowish. The

larva lives in a case composed of minute fragments of moss, sand and lichens. The anterior end of the case is dilated into a shield-like hood, which hides and protects the head of the larva when feeding. The materials worked into the under-surface of the hood in one specimen are composed entirely of minute fragments of mica. The larva, when disturbed, retires completely into the tube. It feeds upon small mosses and lichens upon rocks and trees. Before pupating, the larva folds down the edges of the hood over the mouth of the tube, like an envelope, fastening them with silk. The case is fixed to the rock or other support, and hangs there until the moth appears (*Green*)(2).

PSEUDODOXIA PALIMPSESTA, MEYR. (PLATE XXV, FIG. 2.)

Pseudodoxia palimpsesta, Meyr., Exot. Micr., I, 308 (1915)(1).

Described from Hazaribagh.

This species was reared from larvæ found feeding on bark of mango twigs at Hazaribagh on 19th May 1911. In the Insectary they were placed on a growing mango plant but were observed to feed very little. They were therefore supplied with bare green twigs on which they were seen to feed a little, nibbling only the epidermis.

The larva was described in May 1911 as about 8 mm. long, cylindrical, tapering posteriorly; head dirty dark brown, with a roughened or somewhat pitted surface, provided with very thin longish hairs, perfectly flattened or truncated in front, the flat surface somewhat depressed in the middle; prothorax entirely covered with a dirty dark brown shield, divided longitudinally in the middle by a faint yellowish line; rest of body soft, pale yellow, posteriorly with a pinkish tinge; segments distinct and wrinkled into transverse folds; the thoracic legs dark brown or blackish, shiny; five pairs of prolegs short, crochets arranged in an incomplete circle and differing in size, crochets on anal prolegs arranged in a line.

The larva lives in a cylindrical horn-shaped case, which is curved on one side, about 16 to 18 mm. long, about 2 mm. broad across the anterior extremity and tapering almost to a point posteriorly, the broad end being truncated and open. The larva protrudes its head and legs through this anterior end of the case and thus hangs to the twigs and feeds. The posterior end of the case is also open but is blocked by the cast larval skins which are packed into this end. The interior of the case is clean and contains nothing but these cast skins, the pellets of frass being thrown out through the open end of the case.

Pupation takes place within the larval case, the open mouth of which is closed by two layers of brown silk. In captivity the case was not attached

to anything for pupation but was lying on the bottom of the dish. The moth emerged by detaching the brown layers from the mouth of the case at one place, leaving the empty pupa-case inside.

On opening one of these cases carefully, fourteen larval skins were found in it, showing that the larva had undergone at least fourteen moults. The mode of moulting is peculiar ; the flat part of the head opens like a lid, remaining attached at only one place near the mouthparts, and the larval skin is slid off and shoved towards the tapering end of the larval case.

The larval period is apparently prolonged, at least on occasion. From larvæ collected on 19th May 1911, three moths emerged on 24th October 1911, one more moth on 8th October 1912, two larvæ remained feeding on 18th April 1913 and one of these lived until 31st May 1913.

PSEUDODÓXIA PICROPHÆA, MEYR.

Pseudodoxia picrophœa, Meyr., B. J., XX, 152-153 (1910)(1).

Described from Hakgala, in Ceylon(1). Larva in portable case on lichens on trees and rocks(1).

PSEUDODOXIA SEPOSITELLA, WLK.

Gelechia sepositella, Wlk., Cat., XXIX, 630(1) ; Moore, Lep. Ceylon, III, 513 (1887)(2).

Pseudodoxia sepositella, Meyr., B. J., XX, 153 (1910)(3).

Described from Ceylon(1, 2), Maskeliya(3).

Larva in case on lichens.

PROMALACTIS CORNIGERA, MEYR.

Promalactis cornigera, Meyr., Exot. Micr., II, 213 (1918)(1).

" Bred at Almora, 6,000 feet, in August from *Pinus longifolia* (? bark or wood) (*Beeson*) "(1).

This species has also been bred at Dehra Dun by Mr. C. Beeson on 30th March 1916 from a *chir* (*Pinus longifolia*) log collected in the Dalhousie Range Chamba State, on 26th January 1916.

PROMALACTIS SEMANTRIS, MEYR.

Epicallima semantris, Meyr., B. J., XVII, 408 (1906)(1).

Promalactis semantris, Meyr., B. J., XVIII, 806 (1908)(2).

This species has been bred out at Dehra Dun by Mr. C. Beeson from *sal* (*Shorea robusta*) logs obtained from (1) Guma Range, Goalpara Division, Assam ; (2) East Range, Haltugaon Division, Assam ; (3) Kheri Division, U. P. ;

(4) Lachiwala Range, Siwaliks, and also from a firewood log (of uncertain origin) of *Eugenia jambolana* at Dehra Dun. Emergence took place 3½ to 6 months after the logs had been placed in the breeding cages, ten moths emerging between 15th March and 1st April and one moth on 24th October.

ARISTEIS THWAITESII, MO.

Aprata thwaitesii, Moore, Lep. Ceylon, II, 107, t. 118, ff. 7, 7ª (1883)(1); Hampson, Faun. Ind. Moths, I, 304 (1892)(2).

Apparently confined to Ceylon(1, 2). Larva in case on *Eugenia* (*Syzygium*) *caryophyllæum*(1).

Mr. Meyrick informs me (*in litt.* 25th Feb. 1916) that this species is perhaps really native in one of the islands further East and carried to the Botanical Gardens at Peradeniya with its foodplant.

PHYSOPTILIDÆ.

PHYSOPTILA SCENICA, MEYR.

Physoptila scenica, Meyr., B. J., XXII, 777 (1914)(1).

Described from Karwar, in North Kanara(1); in Pusa collection from Bababudin Hills, Mysore (November 1912).

Larva in young (but not quite new) shoots of *Careya arborea*; can be detected by excrement protruded in a bunch from the original entrance-hole in stem (*Maxwell*)(1).

XYLORYCTIDÆ.

PTOCHORYCTIS SIMBLEUTA, MEYR.

Ptochoryctis simbleuta, Meyr., B. J., XVIII, 150 (1907)(1); Antram, Bark-eating Borers of Tea, pp. 14-16, f. 8 (1907)(2).

Metathrinca simbleuta, Lefroy, Ind. Ins. Life, p. 535 (1909)(3).

Recorded from several parts of Sylhet, where the larva is a pest on tea-bushes, eating away the bark.

Larva about 12 mm. long, dark red-brown, head black; smooth and hairless. It builds on the bark a raised case made entirely of its own excreta spun together with silk, the upper and lower ends of this case being extended along the branch in the form of a loose web, under which covering the larva feeds, eating right through the bark into the wood of the stem. Pupa in silken cocoon attached to bark under the larval gallery; light brown or yellowish, about 8 mm. long; pupal stage occurs during the latter half of February and March(2).

Fig. 1. *Odites spoliatrix*:—Moth. natural size and magnified, with more highly enlarged side-view of head.

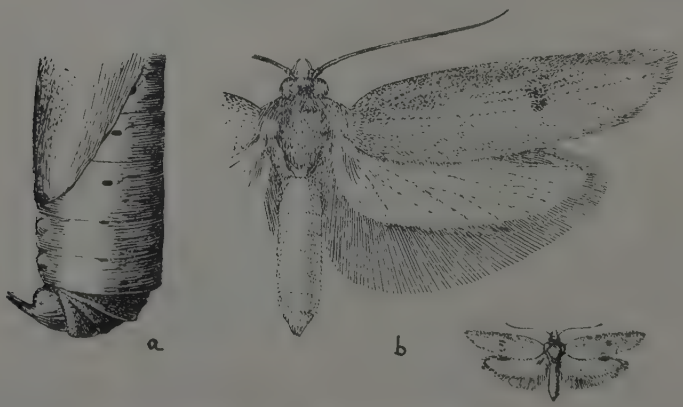


Fig. 2. *Procometis trochala*:—*a*. posterior portion of pupa (x 6) ; *b*. moth, natural size and magnified (x 4).

Mr. Andrews informs me (*in litt.* 7th March 1916) that he does not know this outside of Sylhet.

ANTITHYRA VINEATA, MEYR.

Antithyra vineata, Meyr., B. J., XVII, 404 (1906)(1).

Described from Peradeniya. Larva in a peculiar case on minute algæ and lichens(1).

ODITES ATMOPA, MEYR.

Odites atmopa, Meyr., B. J., XXII, 780 (1914)(1).

Originally described from Kandy(1), this species has been reared at Pusa on 20th March 1913 from larva on *nim* (*Melia azadirachta*) leaves.

ODITES BAMBUSÆ, WLSM.

Odites bambusæ, Wlsm., in Swinh. Cat. Het. Oxf. Mus., II, 544 (1900)(1).

Described from Ootacamund. Larva a leaf-roller on bamboo; pale green, naked, smooth, rather more than an inch long(1).

ODITES HEDERÆ, WLSM.

Odites hederæ, Wlsm., in Swinh. Cat. Het. Oxf. Mus., II, 544-545 (1900)(1).

Described from Ootacamund. Larva pale green, about an inch long, head brown; feeds on ivy, sometimes spinning two leaves together flat and living between them, sometimes rolling up the leaves. Pupa brown(1).

ODITES MELITITIS, MEYR. MS.

Has been reared at Coimbatore from pupa in field-beans, 3rd February 1913, and from larva found on a road, 21st July 1913.

ODITES SPOLIATRIX, MEYR. (PLATE XXVI, FIG. 1.)

Odites spoliatrix, Meyr., Exot. Micr., I, 509-510 (1916)(1).

Described from Coimbatore and the Konkan(1).

Bred in August at Coimbatore "from larva forming gallery in nest of a social spider. . . . . The larva presumably feeds on insect-refuse in the web; this interesting habit is analogous to that of *Brachmia xerophaga*"(1).

This has also been reared at Pusa, between 1st February and 21st April 1916, from a nest of *Stegodyphus sarasinorum* spun on *Inga dulcis*. One specimen was also reared at Pusa on 28th September 1915 from a collection of larvæ and pupæ found in rolled-up mango leaves, but it is not definitely known that the larva of this moth had fed on mango

PROCOMETIS TROCHALA, MEYR. (PLATE XXVI, FIG. 2.)

Procometis trochala, Meyr., B. J., XVIII, 635 (1908)(1). P. Z. S., 1908, 730(2); Lefroy, Ind. Ins. Life, p. 536 (1909)(3).

Described from Pusa(1). Also in Pusa collection from Chapra in Bihar.

"Larvæ found feeding upon the dry fallen leaves of sugarcane. The larva fixes two leaves together with silk and lives within, moving gradually along and placing cross threads as it goes, so that its excrement is caught in the threads and the path of the larva can be traced for over a foot between the leaves. It feeds on the dry leaf and pupates between the webbed leaves" (3).

This species has been reared at Pusa from larvæ found webbing together dry sugarcane leaves (trash stripped from the canes) lying on the ground.

A larva found at Pusa on 3rd September 1906 was described as nearly 31 mm. long, broad anteriorly, tapering slightly posteriorly, light dusky grey; head broad, chitinous, dark reddish-grey, with distinct clypeus, dull-grey antennæ thickened at scape, and strong, notched, dark-red mandibles; prothoracic shield dark grey faintly speckled with irregular yellowish-brown dots; mesothorax and metathorax with a transverse dark grey line set with small grey hairs; legs dull grey, greasy-looking, acuminate, penultimate segment with shiny chitinous patch; posterior portion of abdominal segments whitish-grey with fine dark grey transverse lines across dorsum, and on these lines fine dull-grey hairs projecting forward; anal segment with a thin dark-grey chitinous shield.

The pupa, obtained from the above larva, was described as 11 mm. in length, cylindrical, tapering posteriorly; head prominent with dark rounded eye-caps; wing-pads deep red; spiracles prominent, small, oval, eight abdominal segments visible.

The larva pupated on 24th September and the moth emerged on 3rd October 1906.

The larva constructs a long tubular gallery of dead leaves lined with silk which may be as long as $13\frac{1}{2}$ inches. It feeds on the epidermal layers and the parenchyma of the leaf. The pupa lives between the folds of the leaves and is never found on the ground.

Besides sugarcane leaves this species has been bred at Pusa from larvæ feeding on dried *arhar* (*Cajanus indicus*) stem and in dead castor branch, and once from a larva found boring into living sugarcane. There are apparently two broods annually, as we have moths taken in June and October.

NEPHANTIS SERINOPA, MEYR.

Nephantis serinopa, Meyr., B. J., XVI, 603 (1905)(1); Lefroy, Ind. Ins. Life, pp. 535-536 (1909)(2); Fletcher, S. Ind. Ins., pp. 460-461, f. 336 (1914)(3); Proc. Second Entl. Meeting, pp. 259, 262 (1917)(4).

Originally described from Batticaloa, on the East coast of Ceylon(1). Also occurs commonly throughout the Plains of Southern India(2, 4), Bengal(4) and Lower Burma(4).

" The eggs, which turn pinkish after deposition, are laid in small batches of a dozen or twenty together amongst the frass and debris of larval galleries on palm leaves. The caterpillar constructs a gallery of silk and excrementitious matter over the lower surface of palm leaves, eating away the green matter and reducing the leaf to a thin membrane so that it dries up and dies. In cases of bad infestation, practically the whole leaf may be eaten away, only the ribs remaining. The caterpillar is about 25 mm. long, in colour greenish with faint paler lines along the body, and a black head. Pupa slender, dark red-brown, in a cocoon spun in the larval gallery. Foodplants :— Coconut and Palmyra palms "(3).

This species does not seem to occur at Pusa and has not been bred there. Our specimens are from Batticaloa (larva on coconut), Koilpatti and Coimbatore (larva on palmyra), Tirumalai, S. Arcot (larva on coconut), Uttarpara (Hughli) (larva on coconut), and Quilon (larva on coconut).

STENOMIDÆ.

SYNCHALARA RHOMBOTA, MEYR.

Agriophara rhombota, Meyr., B. J., XVII, 981-982 (1907)(1).

Synchalara rhombota, Meyr., Exot. Micr., II, 60 (1917)(2).

Described from the Khasi Hills and Silchar, in Assam(1).

Larva damaging tea-bushes, feeding between spun leaves and attacking bark when the foliage has been stripped off(1).

" Very common in Assam and used to be a serious pest. The pupæ are found in large numbers, at this time of year, in the soil at the foot of the bushes, and by systematic collection of these when the bushes are being hand-forked in the cold weather the pest has been completely kept in check in this district [Cinnamara]. It is still very bad in the Margherita district of North Lakhimpur." (E. A. Andrews, *in litt.* 7th March 1916.)

STENOMA ICHNÆA, MEYR.

Stenoma ichnæa, Meyr., B. J., XXIII, 118 (1914)(1).

Described from North Kanara(1).

Larva feeding between spun leaves, or a broken portion spun on surface of a whole leaf, of *Symplocos spicata*; pupa very obese, making a constant clicking sound when disturbed (*Maxwell*)(1).

ORNEODIDÆ.

Twenty-two species of *Orneodes* and one of *Triscædecia* are known from the Indian region, but the life-histories of no species have been discovered in India or Ceylon. The only Indian species of whose early stages anything is known is *O. hubneri*, Wlgn., which is widely distributed in Europe, South Africa and Canada and which has been recorded from Kashmir also. The larva of *O. hubneri*, according to Hofmann (*Iris*, XI, 350-351 (1898)), feeds in Europe in the flowers and seeds of *Centaurea jacea* and *Scabiosa* (*Knautia*) *arvensis*, forsaking the *Scabiosa* flowers when full-fed and pupating in little cocoons made of petals of the dried flowers. In India the larvæ may be looked for in flowers, and perhaps also in galls in stems, of *Lonicera*, *Scabiosa*, *Stachys* and *Colquhounia coccinea*.

COPROMORPHIDÆ.

Four species have been described from Ceylon and Assam. The early stages of no Indian species are known as yet.